

### **REMARKS/ARGUMENTS**

These remarks are made in response to the final Office Action of July 9, 2008 (hereinafter Office Action). As this response is timely filed within the 3-month shortened statutory period, no fee is believed due. The Office, however, is expressly authorized to charge any deficiencies or credit any overpayments to Deposit Account 50-0951.

### **Claims Rejections – 35 USC § 103**

In the Office Action, Claims 19, 20, 22-25, 27-30, 32-35, 37, and 38 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,421,672 to McAllister, *et al.* (hereinafter McAllister) in view of U.S. Patent 6,256,630 to Gilai, *et al.* (hereinafter Gilai).

Applicants respectfully disagree with the rejections and thus have not amended the Claims to overcome the cited prior art. Applicants have cancelled Claims 1-18, 21, 26, and 29-38. However, Applicants are not conceding that the cancelled claims fail to present patentable subject matter. The cancellations are solely for the purpose of expediting prosecution. Accordingly, the cancellations should not be interpreted as the surrender of any subject matter, and Applicants expressly reserve the right to present the original version of any of the cancelled claims in any future divisional or continuation applications from the present application.

### **Aspects of Applicants' Invention**

It may be useful at this juncture to reiterate certain aspects of Applicants' invention. One embodiment of the invention, typified by Claim 19, is a method of disambiguating database search results within a speech interface.

The method can include, responsive to a database search, retrieving multiple database entries including a plurality of common data fields and processing the common data fields of the retrieved database entries according to predetermined disambiguation criteria. The predetermined disambiguation criteria can include excluding any data field

having duplicate data items, excluding any data field having at least one data item that is unpronounceable, and excluding any data field having at least one data item that exceeds a predetermined maximum length. See, e.g., Specification, page 5, line 29 to page 7, line 7 and page 7, line 29 to page 8, line 11.

The method also can include, based upon the processing, identifying from among the plurality of common data fields at least one disambiguation data field that satisfies the predetermined disambiguation criteria and selecting one disambiguation data field based on a predetermined selection criterion when more than one disambiguation data field is identified in the identifying step. See, e.g., Specification, page 7, lines 8-17 and page , lines 12-16.

The method further can include presenting, through the speech interface, data items corresponding to the selected disambiguation data field for each retrieved database entry, wherein the speech interface is used in conjunction with a system in which the database search is performed, and wherein the speech interface provides users of the system with an interface for searching for information contained within a database in which the database search was conducted and for audibly receiving results of the database search. See, e.g., Specification, page 5, line 29 to page 7, line 7 and page 7, line 29 to page 8, line 11.

### **The Claims Define Over The Prior Art**

It was stated in the third paragraph on page 2 of the Office Action:

*"Applicant argues that McAllister does not teach excluding data fields of said retrieved database entries having duplicate data items, stating that McAllister's system prompts the user to supply additional information to select from candidate records. The examiner points out that column 2, lines 52-65 of McAllister teaches, when a data field, such as a name, is duplicated and is not good enough to solve the disambiguation conflict, the system excludes the data field 'name' and examine other data fields such as the addresses of the listings."*

Col. 2, lines 52-65 of McAllister states:

{WP515427;2}

*"A database retrieval system according to the invention includes a searchable database in which the primary key, such [as] a name associated with the telephone directory listing, may be duplicated, i.e., is not unique. To resolve or disambiguate the conflict, the user is prompted to supply additional information determined to be helpful in selecting from among candidate records having the same key. For example, if multiple listings are identified for the telephone listing 'John Smith', the system will examine secondary data fields to identify information unique among the listings, such as the addresses of the listings. The system will then prompt the caller to identify which of the listings is desired, using the address information to distinguish among and select the desired listing(s)."*

As stated in previous responses, Applicants agree that McAllister uses secondary information to disambiguate among multiple hits on the database search. The present invention is in common with McAllister in this aspect. However, McAllister does not teach how to select one disambiguation data field when more than one disambiguation data field is identified in the identifying step. Also, McAllister does not teach excluding any data field having duplicate data items. Rather, in McAllister the data field having duplicate data items (such as the "name") is provided together with the data field having unique data items (such as the "address").

It is further noted that in contrast to the present invention of using automatic analyses of the secondary information to determine which field is best suited for disambiguation when prompting a caller for speech input using a speech user interface, McAllister teaches a technique for ensuring that, when repeating a name to a caller, the appropriate pronunciation is selected from the various pronunciations available for a particular spelling (a speech output consideration) - a goal which is quite distinct from that of the present invention.

It was stated in the fourth paragraph on page 2 of the Office Action:

*"Applicant argues that McAllister does not teach selecting one disambiguation data field when more than one disambiguation data field is identified in the identifying step, stating that McAllister describes that the location field is provided together with the name field to the caller. However, the location field is the only unique and pronounceable field in the table shown in col. 3, lines 10-20. The examiner points out that*

*McAllister, in column 3, teaches selecting one disambiguation field (location field, col. 3 lines 30-34) to distinguish between the callers, while there exist another disambiguation field (Department field, col. 3, lines 40-41) during the identifying step of the caller."*

Since there is only one unique and pronounceable field ("location") in the table shown in col. 3, lines 10-20 of McAllister, it is not clear how McAllister teaches selecting one disambiguation data field when more than one disambiguation data fields are identified in the identifying step. It is noted that in the table shown in col. 3, lines 10-20 of McAllister, the "department" field is not a disambiguation field because both "Cooke" and "Koch" work in the "Engineering" department.

It is further noted that McAllister describes the process of selecting the disambiguation field as one of trying out one field (without any description of why) to see if it satisfies the property of being suitable for disambiguation. If it does, the search process stops; if not, the search for a disambiguating field continues. In contrast, in the process of the present invention, all potential disambiguation fields are examined to select the one that is most suitable for use in a speech user interface.

It was stated in the paragraph bridging pages 2 and 3 of the Office Action:

*"Applicant argues that McAllister does not teach excluding any data fields having at least one data item that is unpronounceable. The examiner refers to col. 4, lines 22-23, wherein unlikely pronunciations are eliminated. Furthermore, determining whether data is pronounceable or not, and ignoring or excluding the unpronounceable one is well known in the art by using multiple techniques i.e. dictionary look up, and as evidenced by applicant, see specification, page 6, lines 11-15 'The search results further can be processed to determine whether the data items within the data fields accurately can be pronounced through a speech interface. Those skilled in the art will recognize that this determination can be made using any of a variety of techniques such as using a dictionary to lookup data items or analyzing the patterns of vowels and consonants of the data items.'"*

Col. 4, lines 22-23 of McAllister states:

*"The system may further consider and eliminate unlikely pronunciations. For example, while the name spelled 'K-O-C-H' may be a*

*potential candidate for the spoken name 'Cook', the converse is unlikely, i.e., a name pronounced 'Koch' would not be spelled 'C-O-O-K'."*

It is noted that in McAllister the unlikely pronunciations are eliminated, but the data field containing the unlikely pronunciations (such as the "name" data field) is not eliminated or excluded. In contrast, in the process of the present invention, any data field having at least one data item that is unpronounceable is excluded.

It was stated in the second paragraph on page 3 of the Office Action:

*"Applicant argues that Gilai does not teach excluding data fields having data items that exceed a predetermined maximum length. The examiner respectfully disagrees and refers to column 12, lines 13-46, wherein the database accessing system of Gilai enters, onto a list, only strings with a predetermined length entered by the user, and obviously ignores the rest. Furthermore, it discards strings with lowest probability which corresponds to strings with higher length. Therefore, Gilai does teach excluding data fields having data items that exceed a predetermined maximum length."*

Col. 12, lines 13-46 of Gilai, states:

*"c. Output process 230--the N most probable strings are copied onto a digital storage medium such as computer memory. Preferably, the N most probable strings are retained as a heap sorted by their probabilities.*

*For example, suppose that the numeric string "2874" is a keypad input to spellguess unit 30, which is intended by the caller to represent the name "BUSH". Spellguess unit 30 uses the method of FIG. 2 in order to produce a list of the most probable strings represented by the numeric string "2874", along with their probabilities.*

*An example of such a list is as follows: (BURG, 0.1611), (BURI, 0.1259), (CURG, 0.1118), (BUSH, 0.1086), (CUSH, 0.1018), (CURI, 0.0874).*

*As described in detail below, the probability of an individual candidate string is based on the probabilities of each trigram included in the string. For example, the probability assigned to BURG might be roughly the product of the known frequencies of occurrence of each of the following trigrams: BUR, URG.*

*The blocks of the recursive spellfinding process are now described in detail:*

*Block 150: "Minimum probability" is typically 0 if less than N strings have been accumulated. If N strings have already been accumulated,*

*"minimum probability" is equal to the probability of the least probable of the N strings.*

*If the probability of the input partial string is less than "minimum probability", the process backtracks to the previous recursive level because the probability of the input partial string will only decline further as its length increases.*

*Block 160: If the partial string is, in fact, a "final" string, i.e. a string of the length which the user entered, then it is entered onto a list, typically organized as a heap, of most probable strings (block 190). Otherwise, the process advances directly to block 200."*

Applicants cannot see how the above quoted text has anything to do with the present invention. The above quoted text describes producing a list of the most probable strings represented by the numeric string "2874" entered by a user using the keypad, along with their probabilities. Since only four numbers are entered, the length of the strings is obvious four. In contrast, in the present invention any data field having at least one data item that exceeds a predetermined maximum length (for example, the data field "Dept. Name" as shown in Fig. 1 of the drawings of the instant application). Also, it is noted that the possible letter strings represented by the numeric string "2874" do not form a data field in the sense of the present invention.

Accordingly, the cited references, alone or in combination, fail to disclose or suggest each and every element of independent Claim 19 and 24. Applicants therefore respectfully submit that Claims 19 and 24 define over the prior art. Furthermore, as each of the remaining claims depends from Claims 19 or 24 while reciting additional features, Applicants further respectfully submit that the remaining claims likewise define over the prior art.

Applicants thus respectfully request that the claim rejections under 35 U.S.C. § 103 be withdrawn.

### CONCLUSION

Applicants believe that this application is now in full condition for allowance, which action is respectfully requested. Applicants request that the Examiner call the undersigned if clarification is needed on any matter within this Amendment, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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